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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/736,004
Filing Date: December 15, 2003
Appellant(s): ZHENG ET AL.

Theodore J. Leitereg
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/16/07 appealing from the Office action mailed 1/24/07.

(1) Real party of interest.

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 4,041,076	AVENIA	8-1977
GB 2361473 A	ROUHANI	10-2001
EP 1340981 A2	HUI	9-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 25, 27, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hui et al. (EP 1340981 A2) in view of Avenia et al. (US 4,041,076).

Claims recite methods, compositions and kits for detecting the presence and/or amounts of entactogens in samples.

Hui *et al* disclose various competitive and noncompetitive methods/assays and a kit for detection and quantitative determination of amphetamine derivatives such as MDA, MDMA, MDEA, MDPA, BDB, MBDB etc (paragraphs [0012], [0024], [0029], [0064-0067], [0059] and [0060]) using antibody against amphetamine derivatives and label derivatives (such as fluorescent, luminescent, radioactive isotope etc.) (paragraph [0022]).

Hui's amphetamine derivatives and immunogens are similar to the compound and immunogen of the present invention and are expected to recognize different amphetamine derivatives suitable for different immunoassays. However, the

linking group or the position of linker at the amphetamine derivative is different from the present compound.

Avenia *et al* disclose amphetamine immunogen, labeled tracer and antibodies (see the teaching of Avenia in above paragraph 5) and disclose competitive immunoassay method for detection of phenentylamines (e.g. norepinephrine, dopamine, epinephrine and amphetamines). The immunogen of Avenia et al. is the same as the immunogen of present application.

Since detection of amphetamine, methamphetamine and their derivatives is important in the field of ecstasy drug and once a hapten, immunogen or an antibody is available, one of ordinary skill in the art would obviously try to use the hapten and the immunogen in different immunoassay methods to develop a better detection assay for the drug.

Therefore, given the above fact, it would have been obvious at the time of the invention to a person of ordinary skill in the art to substitute equivalent hapten, immunogen or antibody as disclosed by Avenia *et al* in the method of Hui *et al*, with the expectation of obtaining a similarly useful immunoassay method and kit for detection of amphetamine and amphetamine derivatives.

Claims 25, 27, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rouhani *et al* (GB 2361473 A) in view of Avenia *et al* (US 4,041,076).

Claims recite methods, compositions and kits for detecting the presence and/or amounts of entactogens in samples.

Rouhani *et al* disclose a method for detection of ecstasy-class analogs. Rouhani discloses preparation of antibody (page 6, lines 19-24; pages 16-18) using the compound conjugated with carrier protein (see abstract) and different homogeneous and heterogeneous immunoassay methods (pages 8-9 and 34) and assay kit (page 31, lines 9-12 and claim 10) for detection and quantitation of ecstasy-class analogs in biological samples (page 22, lines19-24). Rouhani also discloses the above compound conjugated with a protein to be adapted as immunogen (page 41, example 7). Attachment to a carrier protein or a label is also inherent in the process of immunization (see claims 7 and 8) and immunoassay methods (see pages 8-9 and 34) as disclosed in this reference. Rouhani's amphetamine and methamphetamine derivatives and immunogens are similar to the compound and immunogen of the present invention and are expected to recognize different amphetamine derivatives suitable for different immunoassays. However, the linking group or the position of linker at the amphetamine derivative is different from the present compound.

Avenia *et al* disclose amphetamine immunogen, labeled tracer and antibodies (see the teaching of Avenia in above paragraph 5) and disclose competitive immunoassay method for detection of phenentylamines (e.g. norepinephrine, dopamine, epinephrine and amphetamines). The immunogen of Avenia *et al* is the same as the immunogen of present application.

Sine detection of amphetamine, methamphetamine and their derivatives is important in the field of ecstasy drug and once a hapten, immunogen or an antibody is available, one would obviously try to use the hapten and the immunogen in different immunoassay methods to develop a better detection assay for the drug.

Therefore, given the above fact, it would have been obvious at the time of the invention to a person of ordinary skill in the art to substitute equivalent hapten, immunogen or antibody as disclosed by Avenia *et al* in the method of Rouhani *et al*, with the expectation of obtaining a similarly useful immunoassay method and kit for detection of amphetamine and amphetamine derivatives.

(10) Response to Argument

Applicant's arguments and amendments filed 7/16/07 have been fully considered, but they are not persuasive to overcome the rejections under 35 USC 103.

Appellants' argued that the combined teaching of Hui and Avenia or Rouhani and Avenia is deficient in not disclosing or suggesting at least the following limitation of claim 25 "providing in combination in a medium, together with the sample and the antibodies, an enzyme label conjugate of the formula set forth in the claim having a $-(CH_2)_nC(O)$ moiety linking the enzyme to the molecule". Appellants agree that Avenia discloses hapten conjugates wherein a conventional carrier (Avenia, col 2, ln 10-13) is linked to phenylethylamine

compound by a $-(CH_2)_nC(O)$ moiety. However, Appellants' main argument is that Avenia do not disclose linking a phenylethylamine to a label by means of a $(CH_2)_nC(O)$ moiety. Appellants argued that although Avenia states that enzymes may be suitable labels, it is within the context of labeled phenethylamines as disclosed (Avenia, col 4, ln 47-58), namely, labeled derivatives that no not employ a $-(CH_2)_nC(O)$ linking moiety, which is only disclosed for Avenia's novel antigens for forming antibodies. Furthermore, Appellants argued that Avenia is concerned with radiolabeled phenethylamine and antibodies raised against his antigen having a $-(CH_2)_nC(O)$ moiety were clearly superior in all cases to assays utilizing free radical labels and enzyme assays (Avenia, col 11, ln 1-3 and col. 12, ln 1-3) and thus Avenia teaches away labeled conjugate.

This is not found convincing because Avenia clearly discloses that labeled phehenthylamine can be used as a competitor in an immunoassay besides using radiolabeld phenenthylamine. Avenia, in lines 35-58 of column 4, states:

> "The specific antibodies of the present invention are useful as reagents for the determination of phenethylamines of formumula I. In such an assay, **known amount of labeled phenethylamine is mixed with the above antibody** and the sample containing phenethylamine is added. The amount of phenethylamines in the sample can be determined by measuring the inhibition of the binding to the specific antibody of the labeled phenethalylamine by the unknown sample. The reagents may be added in any order. ----------. Suitable labeled phenethylamines for assay purposes include radioisotopically labeled phenethylamines ----------. **One may also employ phenethylamines labeled with any other unique and detectable label --------. Other suitable labels include chromophores, fluorophores, enzymes, red blood cells, latex particles, etc."**

Therefore, Appellants' assertion that Avenia does not disclose labeled phenethylamine conjugate with enzyme and teaches away such conjugates is not correct. Avenia may have preferred radiolabeled phenethylamines as

competitors but also suggests usefulness of other labeled conjugate as described above and therefore, Avenia does not teach away using other labeled conjugates. Immunoassays using radiolabeled tracers may be more sensitive but radiolabeled tracers are not always the preferred tracer because of health hazards and there is always a need/search for alternative non radiolabeled detection using tracers or conjugates that are not radio-labeled for carrying out different assays including immunoassays wherein highly sensitive detection is not needed. Therefore, even though Avenia discloses that radioimmunoassay using radiolabed tracers are more sensitive, cannot be regarded as teaching away of other non-radiolabeled conjugates (e.g. enzyme labeled conjugates). Furthermore, it is noted that all disclosures of non-preferred embodiments must be considered. See In re Nehsenberg 126 PQ 383, In re Boe 148 PQ 507, In re Mill & Palmer 176 PQ 196 (CCPA 1972), In re Simon 174 PQ 114 and In re Lamberti et al. 192 PQ 278 (CCPA 1976).

Avenia *et al* disclose activated hapten (activated with succinimidyl ester) (see formula III), which is capable of conjugating to a carrier protein or to a protein label or a non-protein label. Once an activated hapten is known, it is obvious to one of ordinary skill in the art to conjugate label or carrier at the activated site of the hapten. Since, Avenia discloses detection of phenathethylamine in a sample using labelled phenethylamine which can be enzyme label (see above discussion) and since Avenia discloses activated haptens (see formula III)

capable of conjugating to a protein, one of ordinary skill in the art would easily envision conjugating the label (e.g. enzyme label) with the activated hapten.

With regard use of combination of different labeled derivatives in the immunoassay as competitor (e.g. claim 27) in the competitive immunoassay method, the use of single labeled derivatives or combination of more than one labeled derivatives as competitor for detection of a single analyte (e.g. a single amphetamine derivative) or more than one analyte (e.g. more than one amphetamine derivative), would be considered a routine optimization well within the purview of one of ordinary skill in the art absent unexpected result.

In response to appellants argument that the combined teachings of the references do not disclose or suggest presently claimed labeled conjugate, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fines, 837 F.2d 1071, 5USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir.1992). In this case, Avenia discloses activated hapten and also suggested label conjugates with fluorophores, enzymes and latex particle for use in competitive immunoassay and Hui or Rouhani discloses various competitive immunoassay formats for quantitative detection of amphetamine derivatives using antibody against amphetamine (phenethylamine) derivatives and label conjugates. Therefore,

since antibody and labeled conjugates are disclosed for phenethylamine , one of ordinary skill in the art would obviously try different immunoassay formats as taught by Hui or Rouhani with the labeled conjugate as suggested by Avenia et al in order to develop a sensitive non-radiolabeled detection assay because Hui or Rhouhani are also concerned with the non-radiolabeled immunodetection of phenathylamine in a sample.

For the above reasons, it is believed that the rejections should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

/Shafiqul Haq/
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June 17, 2009

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